



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,505	03/28/2002	Takuji Okamoto	220583USOX PCT	2412

22850 7590 12/14/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

LU, C CAIXIA

ART UNIT PAPER NUMBER

1713

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/088,505

Applicant(s)

OKAMOTO ET AL.

Examiner

Caixia Lu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-15,17,18,21-24 and 26-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-15,17,18,21-24 and 26-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/29/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6, 7, and 28-30 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

#### Claim 6

The limitation of W25 eluted at 25°C in hexane of up to 100% lacks antecedence because, according to claim 1 to which claim 6 is dependent on, the maximum solubility of the copolymer in hexane at 25°C can only be 80%, therefore, it is not possible to have W25 to be larger than 80%.

#### Claims 28 and 29

The limitations regarding E<sup>1</sup> and E<sup>2</sup> throughout the instant claims should be deleted since those variables are not in formulas (II) and (III) of claims 28 and 29 respectively.

### ***Claim Rejections - 35 USC § 102/103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 6-7, 12-15, 23, 24 and 27 are rejected under 35 U.S.C. 103(e) as under 35 U.S.C. 103(a) as obvious over Rieger (US 6,555,643) and Kashiwamura et al. (EP 0 818 458).

Rieger claims a linear isotactic propylene copolymer with from 25 to 0% of [mmmm] from 25 to 60%,  $T_g$  in the range of -50 to 30°C (col. 8, lines 36-48; and col. 9, lines 1-3). It is noted that Rieger does not expressly teach the melting temperature  $T_m$ , hexane solubles at 25°C (H25), fraction of elute in hexane at 25°C (W25), molecular weight distribution (Mw/Mn) and intrinsic viscosity  $[\eta]$ , and Rieger's catalyst used for the preparation of the propylene copolymer does not have the same metallocene structures as those of the instant claims. However, the propylene homopolymers with similar properties to those of the instant claims are taught in Rieger's Run Nos. P36 and P45 with  $T_m$  of 50.2°C and 51.7°C respectively and molecular weight distribution of 1.96 and 1.74 respectively. Based on the properties of Rieger's propylene homopolymer, one would have expected Rieger's propylene copolymer (i) to have  $T_m$  slightly lower than the propylene homopolymer because in general copolymer chain has lower regularity

Art Unit: 1713

and, thus, to satisfy the relationship of  $\Delta H \geq 3x(T_m - 120)$ , and (ii) to have  $M_w/M_n$  and  $[\eta]$  similar to those of homopropylene because the copolymer and homopolymer prepared by the same catalyst are expected to share similar molecular weights and molecular weight distributions. Because H25 and W25 are predominantly controlled by the stereoregularity of the polymer chain, and the stereoregularity of Rieger's polymer is encompassed by those of applicants' polymers as disclosed in the specification and both Rieger's polymer and applicants' polymer are prepared by metallocene catalyst which share similar activation centers, one would have expected Rieger's polymer and applicants' polymer to be identical or substantially identical to each other and, thus, having identical or substantially identical H25 and W25.

Kashwamura's Example 6 of page 22 teaches the homopolymerization of propylene in the presence of (1,2'-ethylene)(2,1'-ethylene)bis(3-methylindenyl)zirconium dichloride to provide a polymer with [mmmm] of 58.6%,  $T_m$  of 97°C,  $[\eta]$  of .75 dl/g, and  $M_w/M_n$  of 1.86. The polymer properties of Kashwamura's Example 6 encompass those of the instant claims. Kashiwamura expressly teaches both olefin homopolymer and copolymer can be prepared, one would have immediately envision that a propylene copolymer with similar properties can be prepared by incorporating small amount of olefin comonomers from the same process as Kashwamura's Example 6.

Kashwamura's polypropylene is prepared by a metallocene catalyst which is identical or substantially identical to those of applicants, one would have expected the structure Kashwamura's polymer to be the same or substantially the same as that of the instant

Art Unit: 1713

claims. For the same analysis as shown in the above rejections over Rieger, such a copolymer is expected to be or inherently to be the same as those of the instant claims.

6. Claims 18, 23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rieger (US 6,555,643) and Kashiwamura et al. (EP 0 818 458) in view of Tanizaki et al. (US 5,998,039).

Rieger and Kashiwamura's teaching of preparation of propylene polymer is relied upon as shown above. While Rieger teaches the propylene polymer can be used to prepare molded product (col. 5, lines 46-52), neither Rieger nor Kashiwamura expressly teaches preparation of a resin comprising the propylene polymer and a nucleating agent. Preparation of a molding product from a propylene polymer are conventional in the art and a nucleating agent are often added to the propylene polymer during the melting molding process to increase the crystallization rate in high-speed molding process. Such is taught in Tanizaki col. 29, lines 7-10.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ Tanizaki's teaching to Rieger or Kashiwamura's propylene polymer to prepared a molding product by introducing a nucleating agent to the polymer since such is conventionally done in the art to optimize the productivities and enhance crystallinities of the molding products and in the absence of any showing criticality and unexpected results.

7. Claims 3-5, 8-11, 26 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier et al. (Macromolecules 1995, 28, 3771-3778).

Gauthier teaches propylene homopolymers prepared in the presence of bridged metallocenes. The propylene polymers, Entries 1 and 2 listed in Tables 4 and 5, have no melting temperature, (mmmm) and (mm)(rr)/(mr)<sup>2</sup> which meet those limitations of the instant claims 31, 3, 4, and 26.

Gauthier does not disclose other properties of the polypropylene such as hexane solubles, intrinsic viscosity, [rrrr/(1-mmmm)], W25 and fractions of (rmm). However, those characteristics are controlled by the polymer structure and molecular weight. Because Gauthier's polypropylene is prepared by a metallocene catalyst which has similar catalytic center as those of applicants' metallocene catalyst, and Gauthier's melting temperature, (mmmm) and (mm)(rr)/(mr)<sup>2</sup> characteristics meet those limitations of the instant claims, one would have expected the structure Gauthier's polymer to be the same or substantially the same as those of the instant claims, thus, characteristics such as [rrrr/(1-mmmm)], W25 and fractions of (rmm) are also expected to inherently encompass those of the instant claims.

Once a product appearing to be substantially identical is found and a 35 USC 102/103 rejection made, the burden of proof is shifted to the applicant to show an unobvious difference. In re Fitzgerald, 205 USPQ 594. In re Fessmann, 180 USPQ 324. Applicants have not met their burden to demonstrate an unobvious difference between the claimed product and the products of the prior art examples.

8. Claims 17, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier et al. (Macromolecules 1995, 28, 3771-3778) in view of Tanizaki et al. (US 5,998,039).

Gauthier's teaching of preparation of propylene polymer is relied upon as shown above. While Gauthier does not expressly teach preparation of a resin comprising the propylene polymer and a nucleating agent and a molded product from the propylene polymer. Preparation of a molding product from a propylene polymer are conventional in the art and a nucleating agent is often added to the propylene polymer during the melting molding process to increase the crystallization rate in high-speed molding process. Such is taught in Tanizaki col. 29, lines 7-10.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ Tanizaki's teaching to Gauthier's propylene polymer to prepared a molding product by introducing a nucleating agent to the polymer since such is conventionally done in the art to optimize the productivity and enhance crystallinity of the molding product and in the absence of any showing criticality and unexpected results.

9. Claims 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashiwamura et al. (EP 0 818 458).

Kashiwamura teaches a polymerization catalyst comprising component (A) transition metal complexes represented by formula (II) wherein  $R^1$  to  $R^6$  can be a hetero-atom-containing groups and formula (IV), and (ii) cocatalyst of component (B) (page 3, lines 1-14 and 35-49; and page 13, line 5 to page 14, line 58). Kashiwamura's teaching encompasses the catalyst of the instant claims.




Art Unit: 1713

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful and the matter is urgent, the examiner's supervisor, David Wu, can be reached at (571) 272-1114. The fax numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

  
Caixia Lu, Ph. D.  
Primary Examiner  
December 8, 2004